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Cholera
Fact Sheet

Cholera and Other Vibrio Illness Surveillance Report (CDC 52.79)



Division of Environmental Health and Communicable Disease Prevention			
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### Cholera

# $Overview^{(1,2)}$

Although many cases of cholera occur worldwide every year from natural causes, cholera is also a potential bioterrorism weapon. All cases reported in Missouri to date have been from naturally occurring causes. Contact your Regional Communicable Disease Coordinator immediately if you suspect that you are dealing with a bioterrorism situation.

For a complete description of cholera, refer to the following texts:

Control of Communicable Diseases Manual (CCDM).

Subsection: Cholera

Red Book, Report of the Committee on Infectious Diseases.

# Case Definition(3)

Clinical description

An illness characterized by diarrhea and/or vomiting; severity is variable.

#### Laboratory criteria for diagnosis

Isolation of toxigenic (i.e. cholera toxin-producing) Vibrio cholerae O1 or O139 from stool or vomitus, or

Serological evidence of recent infection

#### Case classification

Confirmed: a clinically compatible case that is laboratory confirmed

#### **Comment**

Illnesses caused by strains of *V. cholerae* other than toxigenic *V. cholerae* O1 or O139 should not be reported as cases of cholera. The etiological agent of a case of cholera should be reported as either *V. cholerae* O1 or *V. cholerae* O139.

## **Information Needed for Investigation**

**Verify the diagnosis**. What laboratory tests were conducted? What were the results? What laboratory conducted the testing and what is their phone number? What are the patient's clinical symptoms? What is the name and phone number of the attending physician?

**Establish the extent of illness**. Determine if household or other close contacts are, or have been ill, by contacting the health care provider, patient or family members.

Determine the five-day food and water intake.

Missouri Department of Health and Senior Services Communicable Disease Investigation Reference Manual



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**Determine if the case had a history of recent foreign travel.** Cholera has a relatively short incubation period but the disease is very common in Latin America, Asia, Africa, and the countries of the former Soviet Union. Cholera is not endemic in North America and one case may be considered an outbreak.

**Contact the Regional Communicable Disease Coordinator.** If he/she is not immediately available, contact the Disease Investigation Unit's Duty Officer, (573)-751-6113.

# **Case/Contact Follow Up And Control Measures**

Determine the source of infection to prevent other cases:

Does the case or a member of the case's household attend or work in childcare, foodservice, or health care?

Identify symptomatic household and other close contacts and obtain stool specimens from them.

Has the case traveled to an endemic area or where a known outbreak is occurring?

Are there other cases linked by time, place or person?

Does the case engage in sexual or other practices that would put him/her or others at increased risk?

#### **Control Measures**

See the Cholera section of the <u>Control of Communicable Diseases Manual</u> (CCDM), "Control of patient, contacts and the immediate environment".

See the Cholera section of the Red Book.

#### General:

People infected with cholera and their ill contacts should be excluded from foodhandling and the care of children or patients until diarrhea ceases.

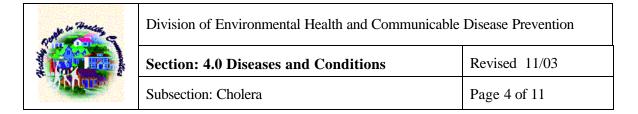
A search for unreported cases is recommended only among household members or those exposed to a possible common source.

# **Laboratory Procedures**

#### **Specimens:**

Testing of stool specimens is not routinely offered at the State Public Health Laboratory.

Preparations must be made to test these specimens. Contact the Regional Communicable Disease Coordinator or, in his/her absence, the Disease Investigation Unit for directions prior to collecting and shipping any specimens to the State Public Health Laboratory.



#### **Reporting Requirements**

Cholera is a Category I disease and shall be reported to the local health authority or to the Missouri Department of Health and Senior Services (DHSS) within 24 hours of first knowledge or suspicion by telephone (800) 392-0272, facsimile or other rapid communication.

- 1. For confirmed or probable cases, complete a "Disease Case Report" (CD-1).
- 2. Complete a "Cholera and Other Vibrio Illness Surveillance Report" (CDC 52.79).
- 3. Attach an additional sheet with a five-day food history for each case.
- 4. Entry of the completed CD-1 into the MOHSIS database negates the need for the paper CD-1 to be forwarded to the Regional Health Office.
- 5. Send the completed secondary investigation form(s) to the Regional Health Office.
- 6. All outbreaks or "suspected" outbreaks must be reported as soon as possible (by phone, fax or e-mail) to the Regional Communicable Disease Coordinator. This can be accomplished by completing the Missouri Outbreak Surveillance Report (CD-51).
- 7. Within 90 days from the conclusion of an outbreak, submit the final outbreak report to the Regional Communicable Disease Coordinator.

#### References

- 1. Chin, James, ed. "Cholera." <u>Control of Communicable Diseases Manual</u>. 17<sup>th</sup> ed. Washington, DC: American Public Health Association, 2000: 100-108.
- American Academy of Pediatrics. "Vibrio Infections." In: Pickering, L., ed. <u>2000 Red Book:</u> <u>Report of the Committee on Infectious Diseases</u>, 25<sup>th</sup> ed. Elk Grove Village, IL. 2000: 638-640.
- 3. Centers for Disease Control and Prevention. <u>Case Definitions for Infectious Conditions Under Public Health Surveillance</u>. MMWR 1997:46 (No. RR-10): 10.
- 4. U.S. Army Medical Research Institute of Infectious Diseases. <u>Medical Management of Biologic Casualties Handbook</u>. 4th ed. July 2001.

# **Other Sources of Information**

- 1. Seas, Carlos and Gotuzzo Eduardo. "Vibrio Cholerae." <u>Principles and Practice of Infectious Diseases</u>, 5<sup>th</sup> ed. Eds. Gerald L. Mandell, John E. Bennett, & Raphael Dolin. New York: Churchill Livingstone, 2000: 2266-2272.
- 2. Tauxe, Robert V. "Cholera" <u>Bacterial Infections of Humans Epidemiology and Control</u>, 3<sup>rd</sup> ed. Eds. Alfred S. Evans and Philip S. Brachman. New York: Plenum, 1998: 223-239.

#### Cholera

#### FACT SHEET

#### What is cholera?

Cholera is an acute, diarrheal illness caused by infection of the intestine with the bacterium *Vibrio cholerae*. The infection is often mild or without symptoms, but sometimes it can be severe. Approximately one in 20 infected persons will develop severe disease characterized by profuse watery diarrhea, vomiting, and leg cramps. In these persons, rapid loss of body fluids leads to dehydration and shock. Without treatment, death can occur within hours.

#### How does a person get cholera?

A person may get cholera by drinking water or eating food contaminated with the cholera bacterium. In an epidemic, the source of the contamination is usually the feces of an infected person. The disease can spread rapidly in areas with inadequate treatment of sewage and drinking water.

The cholera bacterium may also live in the environment in brackish rivers and coastal waters. Shellfish eaten raw have been a source of cholera, and a few persons in the United States have contracted cholera after eating raw or undercooked shellfish from the Gulf of Mexico.

The disease is not likely to spread directly from one person to another; therefore, casual contact with an infected person is not a risk for becoming ill.

#### What is the risk for cholera in the United States?

In the United States, cholera was prevalent in the 1800s but has been virtually eliminated by modern sewage and water treatment systems. The disease is still common today in other parts of the world, including the Indian subcontinent and sub-Saharan Africa.

As a result of improved transportation, more persons from the United States travel to parts of Latin America, Africa, or Asia where epidemic cholera is occurring. U.S. travelers to areas with epidemic cholera may be exposed to the cholera bacterium. In addition, travelers may bring contaminated seafood back to the United States; contaminated seafood brought into this country by travelers has caused foodborne outbreaks.

# What should travelers do to avoid getting cholera?

The risk for cholera is very low for U.S. travelers visiting areas with epidemic cholera. However, travelers should be aware of how the disease is transmitted and what can be done to prevent it. When simple precautions are observed, contracting the disease is unlikely.

All travelers to areas where cholera has occurred should observe the following recommendations:

Drink only water that you have boiled or treated with chlorine or iodine. Other safe beverages include tea and coffee made with boiled water and carbonated bottled beverages with no ice.

Eat only foods that have been thoroughly cooked and are still hot, or fruit that you have peeled yourself.

Avoid undercooked or raw fish or shellfish, including ceviche.

Make sure all vegetables are cooked--avoid salads.

Avoid foods and beverages from street vendors.

Do not bring perishable seafood back to the United States.

A simple rule of thumb is, "Boil it, cook it, peel it, or forget it."

## Is a vaccine available to prevent cholera?

A vaccine for cholera is available; however, it confers only brief and incomplete immunity and is not recommended for travelers. There are no cholera vaccination requirements for entry or exit in any Latin American country or the United States.

#### Can cholera be treated?

Although cholera can be life threatening, it is easily prevented and treated. Cholera can be simply and successfully treated by immediate replacement of the fluid and salts lost through diarrhea. Patients can be treated with oral rehydration solution, a prepackaged mixture of sugar and salts to be mixed with water and drunk in large amounts. This solution is used throughout the world to treat diarrhea. Severe cases also require intravenous fluid replacement. With prompt rehydration, less than 1% of cholera patients die.

Antibiotics shorten the course and diminish the severity of the illness, but they are not as important as rehydration. Persons who develop severe diarrhea and vomiting in countries where cholera occurs should seek medical attention promptly.

# How long will the current epidemic last?

Predicting how long the epidemic in Latin America will last is difficult. The cholera epidemic in Africa has lasted more than 20 years. In areas with inadequate sanitation, a cholera epidemic cannot be stopped immediately, and there are no signs that the epidemic in the Americas will end soon. Latin American countries that have not yet reported cases are still at risk for cholera in the coming months and years. Major improvements in sewage and water treatment systems are needed in many of these countries to prevent future epidemic cholera.

What is the U.S. government doing to combat cholera?

U.S. and international public health authorities are working to enhance surveillance for cholera, investigate cholera outbreaks, and design and implement preventive measures. The Centers for Disease Control is investigating epidemic cholera wherever it occurs and is training laboratory workers in proper techniques for identification of *V.cholerae*. In addition, the Centers for Disease Control is providing information on diagnosis, treatment, and prevention of cholera to public health officials and is educating the public about effective preventive measures.

The U.S. Agency for International Development is sponsoring some of the international government activities and is providing medical supplies to affected countries.

The Environmental Protection Agency is working with water and sewage treatment operators in the United States to prevent contamination of water with the cholera bacterium.

The Food and Drug Administration is testing imported and domestic shellfish for *V. cholerae* and monitoring the safety of U.S. shellfish beds through the shellfish sanitation program.

With cooperation at the state and local, national, and international levels, assistance will be provided to countries where cholera is present, and the risk to U.S. residents will remain small.

# Where can a traveler get information about cholera?

The global picture of cholera changes periodically, so travelers should seek updated information on countries of interest. The Centers for Disease Control maintains a traveler's information telephone line that provides information on cholera and other diseases of concern to travelers. Data for this service are obtained from the World Health Organization. This number is 404-332-4559.

This Fact Sheet was developed from information provided by:

The Division of Bacterial and Mycotic Diseases National Center for Infectious Diseases Centers for Disease Control and Prevention 1600 Clifton Road, Mailstop C09 Atlanta, Georgia 30333

Missouri Department of Health and Senior Services Section for Communicable Disease Prevention Phone: (866) 628-9891 or (573) 751-6113

PATIENT'S NAME:	TEL.: Home (	)		Work (	)	
ADDRESS:	•					
PHYSICIAN'S NAME:					)	

- PATIENT IDENTIFIERS NOT TRANSMITTED TO CDC -

#### SEND COMPLETED REPORT TO STATE INFECTION CONTROL

# CDC CENTERS FOR DISEASE CONTROL AND PREVENTION

# CHOLERA AND OTHER VIBRIO ILLNESS SURVEILLANCE REPORT

State will Centers for Disease Control forward to: and Prevention Foodborne and Diarrheal Diseases Branch M/S A38 1600 Clifton Road Atlanta. GA 30333

CENTERS FOR DISEASE CONTROL AND PREVENTION	I. DEMOGRAPHIC	AND ISOLATE I	NFORMATION	Atlanta, GA 30 OMB 0920-0322 Exp. Dat	
First three letters		REPORTING HEA	ALTH DEPARTMENT	·	
of patients first name:	State: (4-5)	City: (6-15)		County/Parish: (16-26)	
(1-3)	State No.: (27-37)	CDC USE ONLY		FDA No.: (49-57)	
				(38-48)	
2. Date of birth: 3. A	Age: 4. Sex: (68) 5. Race/Ethnicity	(69)		6. Occupation: (70-81)	
Mo. Day Yr. Ye	ears Mos.	America	not Hispanic) (2) Hispa an Indian/ Native (5) Unk.	(9)	
7. Vibrio species isolated (che	eck one or more):	Data anasir	man calle ated		
Species	Source of specimen(s) collected from patie		nen collected specify earliest date)	If wound or other, specify site	<u>e</u> :
	Stool Blood Wound Other	Mo. Day	y Yr.		
V. alginolyticus			(86-91)		(92-103)
V. cholerae O1	(104) (105) (106) (107)		(108-113)		(114-125)
V. cholerae O139			(130-135)		(136-147)
V. cholerae non-01, non-013	39(148) (149) (150) (151)		(152-157)		(158-169)
V. cincinnatiensis	(170) (171) (172) (173		(174-179)		(180-191)
V. damsela	(192) (193) (194) (195		(196-201)		(202-213)
V. fluvialis			(218-223)		(224-235)
V. furnissii			(240-245)		(246-257)
V. hollisae			(262-267)		(268-279)
V. metschnikovii			(284-289)		(290-301)
V. mimicus			(306-311)		(312-323)
V. parahaemolyticus			(328-333)		(334-345)
V. vulnificus			(350-355)		(356-367)
Vibrio species - not identified			(372-377)		(378-389)
Other (specify):	(390-405) (406) (407) (408) (409)		(410-415)		(416-427)
8. Were other organisms isolated from the same specimen that yielded Vibrio?  Specify organism(s):  (429-450)  9. Was the identification of the species of Vibrio (e.g., vulnificus, fluvialis) confirmed at the State Public Health Laboratory?					
10. Complete the following information if the isolate is <i>Vibrio cholerae</i> O1 or O139:					
Serotype (452) (check one) I Biotype (453) (check one) I Toxigenic? (454) (check one) If YES, toxin positive by: (check all, that apply)					
Inaba (1) Not Done		· 1		SA (455)	= -
Ogawa (2) Unk. (9)	Classical (2) Unk. (9)			ex agglutination (456)	
Hikojima (3)	i	į	Oth	ner (specify):	
l	;	:			(457-471)

II. CLINICAL INFORMATION Vibrio species: State: \_\_\_\_ Age: \_\_\_\_ Sex: Date and time of onset 2. Symptoms F (1) of first symptoms: and signs: max. C (2) ... Headache Fever ..... temp (486) (487) (488) Muscle pain Dav Nausea Cellulitis Vomiting ..... (472-7) (515) Site: Bullae .. (516-530) (max. no. stools/24 hours: Hour Min am (1) Other ..... (532) (specify): Visible blood in stools ..... \_\_ pm (2) (533-549) (478-9)(480-1)(482) Abdominal cramps ..... 3. Total 4. Admitted to a hospital for this illness? (553) 5. Any sequelae? (e.g., amputation, skin graft) (566) 6. Did patient die? (636) duration If YES, describe: of illness: If YES, date of death: Admission Yes (1) Yes (1) \_ Yes (1) (554date: 559) Dav No (2) No (2) No (2) Discharge (560-(days) Unk.(9) Unk.(9) Unk.(9) date: (637-642) (550-552) (567-635) Date began antibiotic: Date ended antibiotic: 7. Did patient take an If YES, name(s) of antibiotic(s): antibiotic as treatment Day Day for this illness? (643) 1. (647-652) (653-658) Unk. No (659-661) (668-673) (674-676) (677-682) (683-688) 8. Pre-existing conditions? 9. Was the patient receiving any of the following treatments or taking any of Unk. the following medications in the 30 days before this Vibrio illness began? Alcoholism .... Unk. If YES, specify treatment and dates: Diabetes ...... (690) on insulin? Peptic ulcer **Antibiotics** Gastric surgery ...... (694-709) Chemotherapy Heart disease ........ (710) Heart failure? Radiotherapy (852-870) Hematologic disease (712) type: Systemic steroids .. (872-890) (729) type: Immunosuppressants Immunodeficiency . (746) type: (892-910 Liver disease .... Antacids ...... (763) type: (764-779)(912-930) Malignancy .... H<sub>2</sub>-Blocker or other (780) type: (781-796) ulcer medication ...... Renal disease (797) specify: (932-950) (798-810) (e.g., Tagamet, Zantac, Omeprazole) III. EPIDEMIOLOGIC INFORMATION 1. Did this case occur as part of an outbreak? Unk. (9) (Two or more cases of Vibrio infection) (951) If YES, describe: (952-970) 2. Did the patient travel outside his/her home Patient home state: state in the 7 days before illness began? Date Entered Date Left City/State/Country Day (973) (974-1004) (1005-1010) (1011-1016) If YES, list (1017-1047) (1048-1053) (1054-1059) destination(s) and dates: (1060-1090) (1097-1102) 3. Please specify which of the following seafoods were eaten by the patient in the 7 days before illness began: (If multiple times, most recent meal) Type of seafood Any eaten raw? Type of Any eaten raw? Day Yr. No Unk. seafood Yes (1) Unk Yes (1) No (2) Unk. (9) Shrimp (1144-1149) Crawfish Crab .. (1112-1117) shellfish Lobster (specify): (1167-1191) Mussels Fish ..... (1193-1198) Oysters .. (1136-1141) (1135) (specify):

Name of Hospital:

Address:

State: Age: Sex:	III. EPIDEMIOLOGIC INFORMATION (CO	ONT.) Vibrio species:			
4. In the 7 days before illness began, was patient's skin exposed to any of the following?	Unk.				
A body of water (fresh, salt, or brackish water)	If YES, specify body of water location:		229-1242)		
Drippings from raw or live seafood	If YES to any of the above, answer each:  Handling/cleaning seafood	(2) (9) (1) (2) (5			
Date of exposure:    Mo. Day Yr.	Swimming/diving/wading  Walking on beach/shore/ fell on rocks/shells	(1243)   Construction/repairs	(1247)		
Time of exposure: am (1) am (2) am (2) (1258-9) pm (2)	Boating/skiing/surfing	(1246)	 261-1275)		
If skin was exposed to water, indicate type: (1276)	Additional	comments:	••••••		
Salt (1) Brackish (2) Unk. (9)  Fresh (2) Other (8) (specify):	(1277-1284)				
		······································	285-1290)		
If skin was exposed, did the patient sustain a wound d     YES, sustained a wound. (1)  YES, had a p	uring this exposure, or have a pre-existing wound? (cfore-existing wound. (2)  YES, uncertain if wound				
If YES, describe how wound occurred and site on bo	· · · ·	new or old. (3) NO. (4) Olik . (9)			
· ·	e illness should be recorded in section II, Clinical Inform	mation, only).			
		·	292-1320)		
If isolate is	Vibrio cholerae O1or O139 please answ	ver questions 5 - 8.			
<ol> <li>If patient was infected with V. cholerae O1 or O139, following risks was the patient exposed in the 4 day</li> </ol>		Yes No Unk. (1) (2) (9)			
Yes No Unk. (1) (2) (9)	Other person(s) with cholera or cholera-like illness	(1324)			
Raw seafood[ ] [ ] (1321)	Street-vended food	(1325)			
Cooked seafood (1322)	Other	(1326)			
Foreign travel (1323)	(specify):		1327-1350)		
If answered "yes" to foreign travel (question III. 5),     had the patient been educated in cholera prevention	n measures before travel?	Yes No Unk. (1) (2) (9) 			
If YES, check all source(s) of information received:					
Pre-travel clinic (1352) Friends (1	Travel agency (1358)				
Airport (departure gate) (1353) Private pl	hysician (1356) CDC travelers' hotl	line (1359)			
Newspaper (1354)	epartment (1357) Other (specify): (136				
- 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10		Vec (t) Ne (t) Unit	(361-1400)		
7. If answered "yes" to foreign travel (question III. 5), what was the patient's reason for travel? (check all	II that apply)	8. Has patient ever received a res (i) No (2) OTH cholera vaccine?	(1428)		
To visit relatives/friends (1401) Other (sp	To visit relatives/friends (1401) Other (specify): (1405) ( If YES,				
Business (1402)	(1406-1426)	Oral (1429) Parenteral (1430	))		
Tourism (1403) Unk. (1427)		Mo. Day Yr.			
Military (1404)		Most recent date: (1431-1436)			
If domestically acquired illness due to <u>any</u> <i>Vibrio</i> species is suspected to be related to seafood consumption, please complete section IV (Seafood Investigation).					
	ADDITIONAL INFORMATION or COMMEN	ITS			
		CDC Use Only			
		Comment: (1444-1454)	443)		
Person completing section I - III:	Mo.  Date:	Day Yr. Syndrome: (1) (1437-1442) CDC Isolate No.	1455)		
Title/Agency:	Tel.: ( )				
			(1456-1463)		

Public reporting burden of this collection of information is estimated to average 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to CDC, Project Clearance Officer, 1600 Clifton Road, MS D-24, Atlanta, GA 30333, ATTN: PRA (0920-0322). Do not send the completed form to this address.

State:	- 1	 Λαο· i	1	 Covi	

#### IV. SEAFOOD INVESTIGATION SECTION

For each seafood ingestion investigated, please complete as many of the following questions as possible. (Include additional pages section IV if more than one seafood type was ingested and investigated.)

consumed:	Time			
(1464-1480) (1481-1486)  If patient ate multiple seafoods in the 7 days before onset of illness, please note why this seaf	(1487-8) (1489-90) (1491) (1492-1512) ood was investigated (e.g.,consumed raw, implicated in outbreak investigation):			
2. How was this fish or seafood prepared? (1513)  Raw (1) Baked (2) Boiled (3) Broiled (4) Fried (5) Steamed (6)	Unk. (9) Other (8) (specify): (1514-1530)			
3. Was seafood imported from another country?  Yes (1) No (2) Unk. (9) If YES, spec	fy untry if known:			
4. Was this fish or shellfish harvested by the patient or a friend of the patient?	No (2) Unk. (9) (If YES, go to question 12.)			
Oyster bar or restaurant (1) Seafood market (4) Unk. (9) Truck or roadside vendor (2) Other (8) Food store (3) (specify): (1557-1590)	Name of restaurant, oyster bar, or food store:  ( )  Idress:			
7. If oysters, clams, or mussels were eaten, how were they distributed to the retail outlet?  Shellstock (sold in the shell) (1) Shucked (2) Unk. (9) Other (8) (specify):	(1591)(1592-1610)			
8. Date restaurant or food outlet received seafood:    Mo. Day Yr.   9   1611-1616	O. Was this restaurant or Yes (1) No (2) Unk. (9) food outlet inspected as part of this investigation?			
10. Are shipping tags available from the suspect lot? (1618)  (Attach copies if available)  11. Shippers who handled suspect lot? (1618)  (Attach copies if available)	pected seafood: (please include certification numbers if on tags)			
12. Source(s) of seafood:				
13. Harvest site:  Date: Mo. Day Yr. Sta  (1619-1639)  (1667-1687)  (1688-1693)	Approved (1)			
14. Physical characteristics of harvest area as close as possible to harvest date:  Maximum ambient temp.  Maximum arbient temp.  Maximum arbient temp.  Maximum arbient temp.  Maximum arbient temp.	Date Measured Mo. Day Yr.  (1720-1725)			
Surface water temp	(1729-1734)			
Salinity (ppt)	(1737-1742)			
Fecal coliform count(1751-1755)	(Attach copy of coliform data)			
15. Was there evidence of improper storage, cross-contamination, or holding temperature at any point?  Yes (1) No (2) Unk. (9)  (1762) If YES, specify deficiencies:				
Person completing section IV:	Date: Mo. Day Yr. (1763-1768)			
Title/Agency:	Tel.:			